

strap 60 includes double anchors or connectors 24, as is shown in FIG. 29. However, this is not a limitation on the present invention. In use, the upper end of the strap 60 is preferably attached first and then the bottom or lower end of the strap 60 is attached under the longitudinal arch. In a preferred embodiment, the arch strap 60 is connected at or near the natural origin of the posterior tibialis. As shown in the figures, the longitudinal arch support 56 includes a connector layer 22 thereon for connecting the arch strap 60 as desired. It will be understood that the entire stirrup 52 can have a connector layer 22 on the outside thereof for connecting straps 60 as desired.

[0079] FIGS. 30-32 show a series of elevational views of a wearer's foot. FIG. 30 shows a foot without any support. This is a typical case of a flat arch with undertoned muscles. As can be seen in FIG. 31, using the stirrup 52, the arch support 56 provides support and lifts the arch of the foot. As shown in FIG. 32, the addition of the adjustable arch strap 60 provides even further lift and support to the arch of the foot. It will be appreciated that these figures show the stirrup without any Velcro or connector layer on the outside 22, except on the longitudinal arch support 56.

[0080] In the exemplary embodiments shown in the figures, the garments 10, 30, 40 and 50 are made of a plurality of pieces that are sewn together. It will be understood that the two-way stretch portions of the garments are made of Fabriflex® with a layer of female hook and loop connector material on the opposite side. These are the grip and connector layers and are apparent by comparing the figures showing the outside of the garment to the figures showing the inside—the grip layers 20 correspond to the Velcro connector layers 22 (e.g., compare FIG. 2 to FIG. 6 or compare FIG. 3 to FIG. 8). The leg straps 16, ab straps 17, adjustable arch strap 60 and stirrup 52 are also made of this material. The 4-way stretch pieces or panels 18 are made of nylon. All of the pieces are sewn together to make the garment. It will be understood that this construction is only exemplary and not intended to be a limitation on the present invention.

[0081] Generally, in use, the stirrup 52 decreases over pronation, flat feet, serial distortion and/or other common mechanical and sensory motor muscular imbalances that can cause abnormal gait and movement pattern (wear and tear) pathology both locally in the lower extremities and globally, throughout the body's neuromusculoskeletal system. The stirrup 52 decreases stress on the joints by cuing proprioception and synchronizing the correct, optimal muscles and their firing patterns and retrains the muscles to better dynamically support structures that normally help displace weight and allow the wearer to move smoothly and efficiently. It will be understood that it is within the scope of the present invention to include any of the components of the stirrup 52 in various embodiments of the present invention. For example, only the longitudinal arch support may be included. In another embodiment, only the heel support may be included. In another embodiment, the adjustable arch strap may be permanently attached to the leg portion at one end.

[0082] Other embodiments may just include straps on the lower leg portions 14b. In other embodiments, viscoelastic tape can be disposed in certain portions of the garment for the purpose of preventing migration of the garment. Alternative means for providing a tacky surface for contacting the user's skin may also be used. It will be understood that any

combination of straps is within the scope of the present invention. In another embodiment, the garment may omit the straps and just include stirrups or may just include ab straps and stirrups.

[0083] In another preferred embodiment, the garment 10, 30, 40 or 50 may include neuro nubs, similar to those disclosed in the '704 publication. These neuro nubs preferably comprise soft, tacky bumps, or cutaneous nerve receptor stimulators, which are designed to provide a massaging, stimulating effect when the user moves. In general, patterns of such neuro nubs are helpful in creating proprioceptive stimulation, and also function to provide decreased migration of the garment as the body moves throughout its full range of motion. They are disposed at specific areas on the inside surface of the garment, to stimulate cutaneous nerve receptors in the skin and soft tissue structures to enhance "noise" that creates cues to the brain, enhancing muscle balance, body position awareness, posture, function, and performance.

[0084] Desired locations of the neuro nubs are at known acupuncture sites, as stimulation of these specific energy meridians enhances blood flow and stimulates normal physiology to organs and soft tissues that supply movement, support, and information crucial to those seeking optimal health and function. However, this is not a limitation on the present invention.

[0085] Conventional approaches to date have focused on mechanical support systems that have been shown to create atrophy and a reliance on a brace, which in the long term can create a system of dependence that the inventor believes is detrimental to optimal health and efficient recovery and performance. The straps together with the grip layers, create specific traction and tactile stimulation of cutaneous nerves in the skin. There are a minimum of 20,000 of such nerves per square inch of skin that will transfer specific information to the receptors (mechanoreceptors/nociceptors) that exist by the thousands/millions in the muscle, tendon, ligament, and joint surfaces, causing a predictable unloading of specific, predictable and common muscle imbalances that create and perpetuate joint stress and injury throughout the body.

[0086] Proprioceptive viscoelastic pads may optionally be employed in each of the illustrated embodiments, on the inside surface thereof, either permanently or releasably mounted thereto, for contacting the user's skin at strategic acupuncture meridian points or other locations in order to increase the proprioceptive effect of the garment. These pads, preferably made of silicone, have a skin-contacting surface which is grooved or otherwise modified to improve tactile response, using an acupuncture-type approach. The pressure generated by the garment 10, 30, 40 or 50 creates an acupressure effect. The strategic locations and numbers of pads may be varied in accordance with specific therapeutic objectives.

[0087] Essentially, the garment of the invention functions to create an exoskeleton for the user's lower body, thereby allowing for the sensory motor stimulation or proprioceptive awareness of strategic regions. Increased pressure is applied to these strategic body regions to perform the advantageous sensory motor stimulation or proprioceptive retraining or awareness. Prior art approaches involved mechanical treatment, i.e. physically manipulating portions of the body to desired configurations and limiting all range of motion including the healthy range of motion or non-injured muscles, which, over time, weakens muscles and makes the